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November 12, 2019 Job No. 16 6706

TO: County of San Diego
Planning & Development Services
5510 Overland Avenue Suite 310
San Diego, CA 92123

SUBJECT: LANDSLIDE/ROCKFALL HAZARDS
Alpine 21, Proposed 20-Lot Subdivision, Country Meadows Road, Alpine, California, San Diego County Tract No. 5431, Assessor's Parcel Number 403-160-1516

REFERENCES: *Report of Limited Geotechnical Investigation, Alpine 21, Proposed 20-Lot Subdivision, Country Meadows Road, Alpine, California, San Diego County Tract No. 5431, Assessor's Parcel Number 403-160-15,* by C.W. La Monte Company, Inc., dated August 19, 2016

Alpine 21, Preliminary Grading Plan, County of San Diego Tract No. 5431, by Jones Engineers, Inc., dated May 2019

Alpine 21 Tentative Map Third Iteration Letter, Record Id: PDS2005-3100-5431 (TM); Environmental Log No.: Pds2005-3910-0514-020 (ER); Address: 2683 Country Meadows Road, Alpine; Trust Account No.: 2064822-D-04315, by the County of San Diego, dated August 15, 2019

Landslide/Rockfall Hazards, Alpine 21, Proposed 20-Lot Subdivision, Country Meadows Road, Alpine, California, San Diego County Tract No. 5431, Assessor's Parcel Number 403-160-1516, by C. W. La Monte Company Inc., dared February 4, 2019

County of San Diego, Guidelines for Determining Significance, Geologic Hazards (2007)

In accordance with your request we are providing additional comments on rockfall hazards for the above subject site. This letter addresses comments from the above referenced Iteration Letter; specifically from Attachment "A", Project Issue Checklist Item No. 13-1. This issue states the following:

> *The study does not adequately address potential hazards associated with landslides/rockfall. If there are potential rockfall hazards associated with the project, they must be identified and mapped with proposed mitigation measures. Refer to Significance Guidelines 4.4a through 4.4c in the County's Guidelines for Determining Significance – Geologic Hazards for more information.*

The term rockfall is defined as an individual block, or blocks of rock of any *size* or dimension moving down slope. The rock maybe free-falling, bouncing, rolling or sliding. Landslide and mudflow hazards were evaluated in the referenced documents and are considered low risk potential. The site is underlain by granitic rocks of the southern California batholith. Exposures of granitic rock masses within the southern California batholith exhibit faulting, fractures, and jointing patterns which arc generally a result of stresses induced by tectonic activity, erosional stress relief and weathering processes. Loosening of large rock fragments generated from blast damage at the slope face, as a result of seismic events and/or erosional processes during periods of heavy rain present the greatest potential for rockfall hazard.

The property consists of undeveloped wilderness, generally, consisting of hill and ridge terrain incised by multiple drainages. Alpine Creek enters the property near the northeast quarter and exits at the west central edge of the site. The hilly terrain is generally moderately to steeply sloping. Elevations on the site range from a high of approximately 2325 feet at the top of a knob at the northeast corner of the property to a low of 1948 feet (MSL) in the bottom of Alpine Creek where it exits the property at the west central edge of the site. The project site is characterized by numerous rock outcrops, rock protrusions and "floaters".

Major surface rock outcrop areas are identified on the referenced *Tentative Map.* We have included an evaluation of rockfall hazards using this document. On the plan "green" areas have a high potential for rockfall occurrence during the life of proposed improvements; however most of these potential rockfall conditions do not present a significant geotechnical hazard as the recipients of the any potential rockfalls will be undeveloped wilderness areas. Therefore the actual hazard risk in these areas is considered low.

An area of high rockfall risk potential is located near the northeast corner of the project site. The high risk area is identified in "red" on the attached plan. Significant rock outcroppings are located above proposed Lot 6. The size and geotechnical conditions of the outcroppings present a significant rockfall hazard to this lot and associated road improvements. Grading to construct the building pad of Lot 6 will result in the construction of a cut slope a maximum of 18 feet in height. The cut slope will be constructed at an approximate 1.5:1 (horizontal to

vertical) inclination. The cut slope configuration will further acerbate the hazard potential.

In our opinion this residential area requires protection from potential rockfall hazards from above the proposed cut. It appears a rock "catch fence" or other retainment structure will need to be installed above the top of the cut slope and as needed to protect residential improvements in the Lot 6 area. An expert in rock containment should be consulted for an appropriate catch system. Any potential rockfall hazards within the proposed cut slope cannot be evaluated until exposed by grading and/or blasting.

Remaining rock areas appear to present low to moderate rockfall hazard risk. These areas are identified on the attached plan with "brown" shading. It is difficult to evaluate all potential rockfall hazards due to the current inaccessibility of the site. Rockfall evaluations should continue both during and after mass grading operations to identify any rockfall conditions not anticipated in the preliminary evaluation or revealed by better accessibility. We anticipate, any identified hazards within these areas will be localized and can be dealt with on a site specific basis (if such conditions are encountered); some by simply moving unstable rock/s to a safe location.

In summary, rockfall hazards on the site range from low to high as detailed above and as shown on the attached rock hazard plan. This is a preliminary evaluation; rockfall hazards can be better evaluated during mass grading operations as the site will be more accessible. Further, any potential rockfall hazards within proposed cut slopes cannot be evaluated until exposed by grading and/or blasting. Grading and any required blasting operations may also have an impact on rock stability. Final rockfall mitigation recommendations shall be based on the finished slope conditions and other site considerations during grading.

If you should have any questions after reviewing this letter, please do not hesitate to contact our office. This opportunity to be of professional service is sincerely appreciated.

Respectfully submitted,

C.W. La Monte Company Inc.

Clifford W. La Monte

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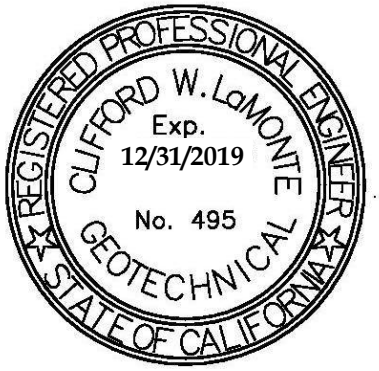

ROCK FALL HAZARDS - ALPINE 21

LEGEND

High Potential for Rockfall
Low Potential Hazard

Low to Moderate Potential for Rockfall
Evaluate During/After Grading

High Potential for Rockfall
Requires Mitigation

Not to Scale